

Anomalous red luminescence of Sm^{3+} ions in $\text{Sm}^{3+}:\text{LaKNaTaO}_5$ single crystals.

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Streszczenie

For the first time much more intense $^4\text{G}_{5/2} \rightarrow ^6\text{H}_{9/2}$ transition than others $^4\text{G}_{5/2} \rightarrow ^6\text{H}_{J/2}$ transitions of the Sm^{3+} -doped oxides have been observed. The Sm^{3+} -doped LaKNaTaO_5 single crystals have been grown by the flux growth method. The emission and excitation spectra as well as decay profiles of the $^4\text{G}_{5/2}$ luminescent level of the Sm^{3+} ion have been measured. The decay curve has been fitted by the Inokuti-Hirayama energy transfer model which revealed that electric dipole-dipole interaction is responsible for the energy transfer processes in the $\text{Sm}^{3+}:\text{LaKNaTaO}_5$ single crystals. The title phosphors may be potentially used as red phosphor for white light-emitting diodes.

Słowa kluczowe

Tantalates, luminescence, Red phosphors

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